


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P13576-OLL		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/EP2004/051037		International filing date (<i>day/month/year</i>) 04.06.2004	Priority date (<i>day/month/year</i>) 20.06.2003	
International Patent Classification (IPC) or national classification and IPC H04M1/03, H01Q1/24				
Applicant SONY ERICSSON MOBILE COMMUNICATIONS AB				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 02.04.2005		Date of completion of this report 23.06.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Pastore, E Telephone No. +49 89 2399-7508		

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**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**
Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-9 as originally filed

Claims, Numbers

1-14 received on 02.04.2005

Drawings, Sheets

1/3-3/3 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☒ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☒ the claims, Nos. 15-16
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/051037

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	1-14
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

PCT/EP2004/051037

Re Item V**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement****2.1 Reference is made to the following documents:**

- D1: WO 03/003505 A (MIKKOLA JYRKI ; FILTRONIC LK OY (FI)) 9 January 2003
D2: PATENT ABSTRACTS OF JAPAN vol. 2000, no. 25, 12 April 2001 & JP 2001
217633 A (TOSHIMITSU HIRAHIRO; NAKAMURA TETSUYA), 10 August 2001

3. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

a communication terminal (page 1 lines 1-3) comprising a speaker and a low profile built-in radio antenna element (page 1 lines 1-12), wherein the antenna element comprises a flat sheet incorporating a conductive antenna trace (figures 2a and 3 "215", page 3 lines 5-26 , page 4 lines 18-36) and where an exciter is connected to the sheet and devised to induce vibrations therein for generating sound (figures 2a-2b-3, page 3 line 5-26 to page 4 line 36).

The subject-matter of claim 1 differs from this known D1 in that

the antenna trace comprises a substantially flat pattern of conductive material carried on the sheet.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as how to reduce the dimension of a communication by integrating together an antenna and a speaker.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) as it represents an alternative solution

to the those disclosed by document D1. The antenna is made by a flat pattern of conductive material carried on the sheet whereas in the document D1 the antenna is a plane.

Claims 2-14 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

The same consideration of above can be done also starting from document D2. Document D2 is disclosing an integrated antenna-speaker made on a flat-plate.

Re Item VII

Certain defects in the international application

1. The term used in claim 1 line 5 "substantially" is considered to a relative term, which has no well-recognised meaning and leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claim unclear, Article 6 PCT.
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D2 is not mentioned in the description, nor are these documents identified therein.

CLAIMS

1. Communication terminal comprising a speaker and a low profile built-in radio antenna element, wherein said antenna element comprises a flat sheet (21)
5 incorporating a conductive antenna trace (22), and where an exciter (26) is connected to said sheet and devised to induce vibrations therein for generating sound, **characterised in** that said antenna trace comprises a substantially flat pattern of conductive material carried on said sheet.
- 10 2. The communication terminal as recited in claim 1, **characterised in** that said sheet is made from an insulating material.
3. The communication terminal as recited in claim 2, **characterised in** that said sheet is made from a plastic material.
- 15 4. The communication terminal as recited in claim 2, **characterised in** that said sheet is made from a ceramic material.
5. The communication terminal as recited in claim 1, **characterised in** that said
20 exciter is connected adjacent to a side edge of said antenna element.
6. The communication terminal as recited in claim 1, **characterised in** that said exciter is insulated from said antenna trace.
- 25 7. The communication terminal as recited in claim 1, **characterised in** that said exciter comprises first and second speaker signal connectors (27).
8. The communication terminal as recited in claim 1, **characterised in** that said antenna trace defines an antenna patch.
- 30 9. The communication terminal as recited in claim 1, **characterised in** that said

antenna trace is connected to a radio feed circuit of the terminal, and to a ground plane (23) which is spaced from the antenna patch.

10. The communication terminal as recited in claim 1, **characterised in** that said
5 antenna element is positioned parallel to a ground plane (23), wherein a spacing between the antenna element and the ground plane acts as an electromagnetic resonance cavity.

11. The communication terminal as recited in claim 1, **characterised in** that a cover
10 member (2) of the terminal comprises an aperture (40) adjacent to said antenna element.

12. The communication terminal as recited in claim 1, **characterised in** that a sound
channel (51,61) extends from a position adjacent to said antenna element to a
15 channel front outlet at a front side of the terminal.

13. The communication terminal as recited in claim 1, **characterised in** that said antenna trace is printed on said sheet.

20 14. The communication terminal as recited in claim 1, **characterised in** that said antenna trace is etched out on said .